

Assessing and Optimizing the Accuracy of Physician Billing Claims For Use in Automated Syndromic Surveillance

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OBJECTIVE

To assess the accuracy of community-based physician claims for identifying 5 syndromes: fever, gastrointestinal, neurological, rash, and respiratory.

BACKGROUND

Several syndromic surveillance systems use ICD-9 diagnostic codes from administrative databases to monitor syndrome occurrence [1]. For this purpose, experts from the CDC and DoD generated lists of ICD-9 codes corresponding to conceptual syndrome definitions [2,3]. However, the accuracy of the ICD-9 codes listed has yet to be assessed in community-based primary care, where a majority of patients with these syndromes would be expected to present, at least initially. ICD-9 coding differences between physicians are expected, because ICD-9 codes on physician claims are not audited by payers.

METHODS

In collaboration with the Quebec provincial health insurance agency (RAMQ), we selected a random sample of 3,600 community-based primary care physicians who practiced in the province of Quebec from October 1, 2005 to September 30, 2007. For each sampled physician, we then randomly selected 10 claims, stratifying on syndrome status (+/-), syndrome type, syndrome ICD-9 code, and visit month (to avoid seasonal bias). The RAMQ then sent the list of sampled physicians and claims to the Quebec College of Physicians who, acting as a trusted third party, recruited physicians to our study. Double-blinded, chart-facilitated telephone interviews were conducted with consenting physicians to obtain information on patient complaints, symptoms, and signs for each sampled visit. The sensitivity, specificity, and positive predictive value of physician claims for identifying the 5 syndromes were estimated by comparison to the physician interviews.

RESULTS

There were 15,997 community-based primary care physicians eligible for our study, of which 3,600 (22.5%) were randomly selected. The selected physicians billed a total of 30,370,924 claims during the 2-year study period, of which 14.2% were positive for one of the 5 syndromes (Table 1). As expected, there was increased physician billing for respiratory and gastrointestinal syndrome in winter (Figure 1).

Table 1. Prevalence of the 5 syndromes in our 2-year sample of physician billing claims

Syndrome	Number of claims	Prevalence (per 1,000)
Fever	457,224	15.1
GI	646,376	21.3
Neurological	152,849	5.0
Rash	443,031	14.6
Respiratory	2,610,965	86.0
Total	4,310,445	142.0

Figure 1. Seasonal variation in physician billing claims for the 5 syndromes

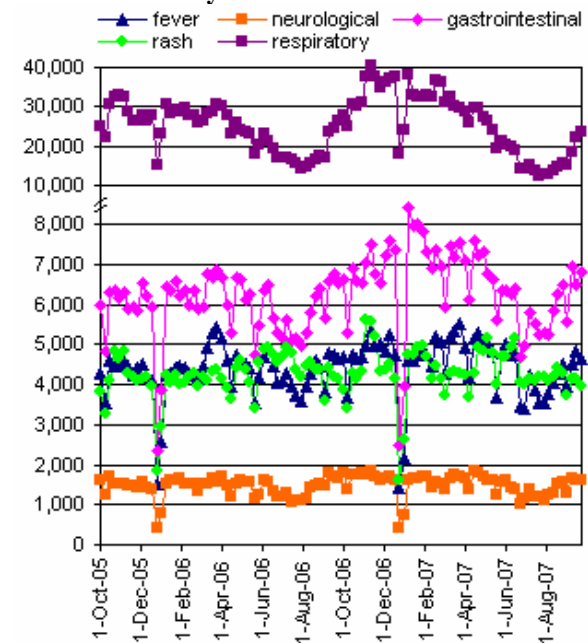


Chart-facilitated physician interviews began in October 2008, and approximately 200 physicians will have been interviewed by the end of November 2008.

REFERENCES

- [1] Bravata DM, McDonald KM, Smith WM, Rydzak C, Szeto H, Buckeridge DL, Haberland C, Owens DK. Systematic review: Surveillance systems for early detection of bioterrorism-related diseases. *Ann Intern Med* 2004;140:910-922.
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